1. Introduction

The measures of inflation following the idea of Dribbond and Kilian (1999) for Peru and Brazil and the results of the projections for the emerging markets of China and Brazil are presented in this paper. However, most of the inflation data is sourced from official data. In this paper, the authors present a method of computing core inflation using the weighted simple average of the inflation of core inflation measures. The inflation should be measured as the weighted mean of inflation. The inflation is a central element of inflation targeting approaches to monetary policy.

Abstract

Luis F. Zegarra
Eduardo Moron

Core Inflation: An Application for Peru

sudden change has taken two different formats in Latin America. Brazil, Chile and Colombia are in what we know as an explicit inflation target, while Peru and Mexico are in what we might call an implicit inflation target. The difference, we believe, is important as far as the local monetary authorities have not discussed this reform at all and they are not being held accountable for any lack of compliance of the targets. Furthermore, the Central Bank has lost the opportunity to enhance its credibility in the midst of a disinflationary effort committing to explicit inflation targets.

A central element of an inflation targeting approach to monetary policy is a proper measure of inflation. The basic idea of an inflation targeting mechanism is to guide monetary policy. The Central Bank will pursue an expansionary (contractionary) monetary policy if the forecast inflation is under (above) the target. Therefore, a key ingredient for this mechanism is not only a measure of inflation that really captures the common growth rate of prices but also a measure of inflation that is forecastable. If the Central Bank forecasts are misguided, this policy framework will increase the volatility of nominal aggregates and probably real aggregates in the short run.

The international evidence suggests the use of core inflation measures instead of headline CPI inflation as an intermediate objective. However, most of the time core inflation is computed by zero weighting observations at the tail of the inflation distribution. In this paper, we claim that core inflation should be measured as the underlying trend of inflation that comes from nominal shocks that have no real effect in the long term. Quah and Vahey (1996) proposed a method of computing core inflation imposing theory restrictions to a SVAR specification. We present estimation for Peruvian data (1991-1998) and compare the predictability properties of competing measures of inflation following a method proposed by Diebold and Kilian (1997).

In Section II, we explain how to compute alternative indicators of core inflation. We show the results for Peru and compare the basic features of those alternative measures of inflation. In Section III, we explain the predictability measure proposed by Diebold and Kilian (1997); and in Section IV we explore the predictability properties of those core inflation measures. We conclude the paper with some policy recommendations for the Peruvian case and comments on further research.


The inflation rate in an economy is typically measured as the change in a consumer price index. However, this seemingly very simple calculation could be affected by two sources of distortion: monetary and real shocks. As Cecchetti (1996) points out, the inflation rate is a noisy and biased indicator. These characteristics make the CPI inflation rate a poor indicator for monetary policy design. In particular, if the Central Bank guides its monetary policy using the headline CPI inflation it may react to temporal shocks in relative prices. These shocks affect the CPI inflation but should not be understood as "monetary" inflation.

This type of noise could be important in a less-developed economy in which the food component in the CPI is sizeable. For instance, in Peru the food component represent 42% of the CPI basket. Along with this relative price shocks we should include possible variations in the exchange rate. Again, if we think of economies with a high proportion of tradable goods the noise-to-signal ratio could be significant.

Another source of distortions is the measurement bias computing the CPI inflation. We did not deal with this problem in this paper but the preliminary results of Cabrero and Valdivia (1998) for the Peruvian CPI showed a 5% substitution bias.

The problem from the Central Bank point of view is how to extract the correct information from the CPI inflation. There are shocks that should not worry the authorities while there are other shocks that represent red lights in future monetary policy decisions. This signal extraction problem is tackled from both a parametric and a non-parametric approach on how to measure properly core inflation.

Let us define the core inflation of product j at period t, \( \pi_{ct} \), as the percentage change in the price of product j caused by a monetary shock. As we said, each product might be influenced by relative price shocks maybe due to seasonal changes, international price swings or factors not directly related to domestic monetary policy. We will need to define \( E(\varepsilon_j) \) as the probability density function of these shocks (see Graph 1) with the special feature that \( E(\varepsilon_j) = 0 \).

**GRAPH 1**

**PROBABILITY DISTRIBUTION OF RELATIVE PRICE SHOCKS**
TABLE 1

<table>
<thead>
<tr>
<th>Average of K of Knees</th>
<th>Average of Skewness</th>
<th>K</th>
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<tbody>
<tr>
<td>88.5</td>
<td>0.635</td>
<td>24</td>
</tr>
<tr>
<td>86.0</td>
<td>0.430</td>
<td>12</td>
</tr>
<tr>
<td>87.9</td>
<td>1.118</td>
<td>9</td>
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</tr>
<tr>
<td>96.0</td>
<td>0.522</td>
<td>6</td>
</tr>
<tr>
<td>96.0</td>
<td>0.359</td>
<td>6</td>
</tr>
<tr>
<td>69.0</td>
<td>0.337</td>
<td>7</td>
</tr>
<tr>
<td>68.0</td>
<td>0.268</td>
<td>6</td>
</tr>
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</table>

SKEWNESS AND KURTOSIS OF INFORMATION RATE (1968-1977)

TABLE 2

<table>
<thead>
<tr>
<th>Probability Distribution Function of Inflation</th>
</tr>
</thead>
</table>

The table shows the weighted average of the core inflation. As mentioned before, the mean will not be a good estimator of the core inflation. Therefore, the table shows the average of the core inflation. The mean is very high compared to the US but about the same in New Zealand. (Table 2) is very high compared to the US but about the same in New Zealand. Therefore, the table shows the average of the core inflation. The skewness that we calculated for the US shows a normal distribution (2.91). The skewness that we calculated for the US shows a normal distribution. The skewness that we calculated for the US shows a normal distribution. The skewness that we calculated for the US shows a normal distribution.
III. An Exercise on Predictability

In this section we conduct a simple exercise on predictability. From the Central Bank perspective, choosing among alternative measures should

<table>
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<th>91181895</th>
<th>23857902</th>
<th>108937074</th>
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<th>23857902</th>
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<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
</tr>
</tbody>
</table>

Comparison Table

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Comparison of Alternative Measures of Core Inflation

Table 2

We calculate three measures of inflation that might be more informative from

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Given an information set $\mathcal{I}$, a loss function $L(\cdot)$, and assuming $\alpha > 0$, we can write

\[
\begin{align*}
\left[ \frac{\alpha}{\alpha + 1} \right] \mathbb{E} \left[ \frac{\alpha}{\alpha + 1} \right]^{-1} &= (\gamma'\Omega^{-1}\gamma)^{-1} \\
\end{align*}
\]

where $\gamma$ is the vector of predicted probabilities.

Indicators as a better measure of predictability:


Loss function is defined under the assumption of a quadratic (and symmetric) loss.

Figure 1: Predictability of Core Inflation

Figure 2: Sample Skewness of Bootstrap Distribution

14. Predictability of Core Inflation Measures

The distribution of p is skewed in small samples.
The weighted median. This measure supplies shock exposure matched to that portion of the economic recovery period that follows the C19 initiation, with the recovery year being the latest. The explanation of this result (see Figure 7) is clear: the lower the recovery year for the weighted median, the higher the recovery level is. For the weighted median, the period is divided into three categories for each of the states of recession. The period ends when real GDP for the first quarter of the year has registered its lowest level. The recovery level is defined as the level reached for the previous quarter (Q4 1998 - Q1 1999). We comment on the recovery level in the previous quarter (Q4 1998). The recovery level should be taken with caution, as it is based on short-term forecasts of each quarter. If we take the current quarter as the basis for the forecast, the difference becomes negligible. These results should not be taken with caution, as they are based on short-term forecasts of each quarter. However, these results should be taken with caution, as they are based on short-term forecasts of each quarter.

Figure 5

Figure 3

Figure 4
A. Conclusions

Predictability of Cointegrating Measures of Core Inflation

Under a Temporary Shock

Forecast Error or Alternative Inflation Indicators

Figure 6

$\bar{k} = 2$, AC Selection Rule, Macaulay's Test

Small Sample Bias Correction

Figure 7
APPENDIX I

SECTOR SPECIFIC SHOCK INDICATORS